sonable to demand a full presentation of her data on the inheritance of *albinism* in mice. In fact, a careful repetition of such work should be expected before her claims are to be accepted.

To those unfamiliar with the work of the geneticists above mentioned, Slye's paper might be taken as presenting the well-known principles of Mendelian inheritance. With a knowledge of the facts, however, it is obvious that the type of inheritance which she outlines has not been observed in similar material by any of the investigators above mentioned. That this discrepancy is not based on an oversight on the part of Miss Slye has been determined by personal correspondence.

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RADIUM FERTILIZER

IN a recent number of SCIENCE[1] there appeared an article by Hopkins and Sachs of the University of Illinois on "Radium Fertilizer in Field Tests" in which they gave results of a series of tests where they used .01, .1 and 1 milligram of radium per acre. Their results showed that radium used in these amounts had no effect.

It is well known that radium is present in all substances in slight traces. I thought it of interest to calculate the amount of radium in one acre. The question immediately arises, What is the volume of an acre? For agricultural purposes I think that every one will agree that the soil should be at least 5 inches, 12½ centimeters, deep.

There are 43,560 square feet in one acre. This when reduced to square centimeters is approximately 40,000,000 or 4×10^7. This when multiplied by the depth, 12½ is 5×10^8 cubic centimeters. Taking Rutherford's average value for the amount of radium in the crust of the earth as 2×10^{-12} grams radium per gram of material,[2] and calling the density of the soil, which is about 1.2, unity, and then multiplying 5×10^8 by 2×10^{-12} we have 1×10^{-3} grams or 1 milligram of radium in an acre of soil.

Thus Hopkins and Sachs in using their maximum amount, 1 milligram, at a cost of $100 only doubled the amount of radium in the soil. A fertilizer is on the market which contains radium, .05 to .08 microgram, or 5 to 8×10^{-8} grams to the pound. The company recommends one pound of the fertilizer to fifty square feet of soil. Fifty square feet of soil, figured as above, contains about 5×10^{-7} grams of radium. Thus the average soil contains ten times as much as they recommend in their fertilizer.

Besides the radium in the soil we have the radium emanation, a gas which slowly rises through the soil from the interior of the earth. Experiments show that about $1{,}000 \times 10^{-12}$ curies of radium emanation issue from every square meter of the earth's surface in an hour. (A curie of emanation is the amount of emanation which is in equilibrium with one gram of radium, or the amount which will collect in a closed vessel in 30 days when the vessel contains one gram of radium.) Every square centimeter of the earth's surface gives off $.1 \times 10^{-12}$ curies per hour, or $.0003 \times 10^{-12}$ curies per second. One curie equals about 4.8×10^5 gram seconds. (A gram second is the amount of radium emanation given off by a gram of radium in a second.) Then $.0003 \times 10^{-12}$ curies equals about 150×10^{-12} gram seconds, or the amount of radium emanation which is continually given off by 150×10^{-12} grams of radium.

Thus the amount of radium emanation given off by the soil is 50 to 100 times as much as that which is given off by the radium in the upper five-inch layer of the soil.

To double the emanation in the soil one must use about 75 milligrams of radium per acre at a cost of $7,500 per acre.

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SUGAR-BEET MOSAIC

ALTHOUGH this disease of the sugar beet has been observed for more than a dozen years it

[1] Vol. 41, p. 732, May 14, 1915.

[2] "Rutherford Radioactive Substances and Their Radiations," p. 650.

has not heretofore been described, so far as the writer is able to determine. It occurs chiefly in the middle and western portions of the United States and appears to be increasing from year to year in some localities. By actual count in a large number of commercial fields it affects from ten to twenty per cent. of the stand and thereby threatens to become a limiting factor in sugar-beet culture in some areas. It makes its appearance about mid-summer and is easily recognized by the following characteristic.

The leaves affected are mottled yellow and green. The spots are not always sharply defined, but usually shade into each other, giving the affected leaves a yellowish appearance. Frequently only a part of the leaves on the same beet are affected, at least during the early stages of the disease. The remaining leaves seem to be perfectly normal in color and growth. The leaves showing the disease symptoms vary in number from one to many on the same plant. They have shortened petioles, usually dwarfed and frequently thickened blades. The affected leaves, if numerous, generally occupy one side only of the beet crown and extend from the outer whorl on one side of the crown to or past the center. The normal leaves occupying the opposite side of the crown give to the beet top a one-sided appearance. Occasionally all the leaves of a mosaic beet show the characteristic symptoms mentioned above. This is generally the case at or near harvest time. The shortened petioles give the leaves a tufted appearance, as in the case of curly-top.

The root is dwarfed and often hairy, thereby further resembling curly-top. The affected beets usually persist until harvest time, but those attacked early in the season are too small to be of any commercial value. It is evident that the assimilative functions of the beet are seriously impaired, but the real cause of the disease is not yet known. As indicated above, there are several particulars in which the two diseases, curly-top and sugar-beet mosaic, are similar, but even though they are both frequently found in the same field, they are easily distinguished the one from the other. The writer has suggested sugar-beet mosaic as a tentative name for this disease. It is hoped that the investigations now under way will establish the real cause of the disease, enable us to find a practical remedy and suggest a more satisfactory name. C. O. Townsend

Delphinus and Phocæna in the Delaware

Occasionally cetaceans enter the Delaware and wander up into fresh water, though apparently not above tidal influence. On January 21, 1915, a dolphin (*Delphinus delphis*) was found at Riverton, New Jersey. It was about six feet in length. I examined it several days later, when the skeleton was shipped to Philadelphia, for the museum of the Academy. Though the dolphin has been taken in New York Harbor, and once at Ocean City in New Jersey in 1894, no other records of its occurrence in New Jersey limits have ever been given.

The harbor porpoise (*Phocæna phocæna*) has been credited with ascending various of the larger rivers of New Jersey, as well as the Delaware, though no actual identified specimens appear to have been noted. I only know of one, which was washed ashore above Bristol, Pennsylvania, during the summer of 1904. It had been floating about with the tides for some time previously, having been first located at Bordentown, New Jersey. It was a rather small specimen, and not preserved.

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Scientific Books

Guidebook of the Western United States: Part *A*, Northern Pacific Route, with a side trip to Yellowstone Park; Part *B*, Overland Route, with a side trip to Yellowstone Park; Part *C*, Santa Fe Route, with a side trip to Grand Canyon of the Colorado; Part *D*, Shasta Route and Coast Line; Bulletins 611, 612, 613, 614, respectively, United States Geological Survey. Washington, 1915.

The second of these is at hand and presumably is representative of the four in general